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Abstract:
PROBLEM TO BE SOLVED: To provide a digital broadcasting recording method which provides a digital broadcasting to a user by the unit of recording which the user is interested in and performs an editing work such as reproduction by the event, copying, erasing and re-arranging and also to provide a digital broadcasting receiver with a built-in recorder.SOLUTION: A recording control task requests the preparation of a new file to a recording task in order to record the event 2 at a time n-seconds before the end of the event 1 (step S2). In the case of event updating time, the recording control task indicates the recording task to changeover a recording file and also to start writing the event 2 (step S3). Then the recording task stops writing to the file where the event 1 is recorded, closes the file and performs a completion processing (step S4).
JPO Machine translation abstract:
(57) **Abstract**
SUBJECT It also aims providing to a user in the record unit which the user was conscious of at providing the record method of the digital broadcasting **it is possible and** which can perform editing work, such as reproduction in an event unit, copy, deletion, and rearrangement, and a recorder built-in digital broadcasting receiving set.
Means for Solution If it becomes n-second before finish time of the event 1, in order that a record control task may record the event 2 on a record task, preparation of a new file will be required (Step S2). When it comes to event modification time, a record control task performs write-in start indication of the event 2 with a change of a recorder file to a record task (Step S3). Then, a record task stops writing to a file which recorded the event 1, closes this file, and

performs end processing (step S4).

Claim(s)

Claim 1 After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, A record method of digital broadcasting characterized by what operation of a recording start key is answered, and a file is generated for every event in a record method which records a desired transport stream on a recorder so that read-out is possible, and is recorded on a recorder.

Claim 2A record method of the digital broadcasting according to claim 1 recording management information of a file generated for every event on a recorder.

Claim 3 After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a record method which records a desired transport stream on a recorder so that read-out is possible, A record method of digital broadcasting characterized by what operation of a recording start key is answered, and a recorder file which records a transport stream of an event for every event, and an unfilled space file before and behind this recorder file are generated, and is recorded on a recorder.

Claim 4A record method of the digital broadcasting according to claim 1 generating a file which records the 2nd event that follows the 1st event during record of the 1st event.

Claim 5 When a signal of prohibition on record during record of the 1st event is received, stop record, and. A record method of the digital broadcasting according to claim 1 recording the 2nd event of a new file when a signal of record permission is received and it is updated by the 2nd event from the 1st event.

Claim 6 After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a recorder built-in digital broadcasting receiving set provided with a recorder recorded so that read-out of a desired transport stream is possible, A renewal monitor means of an event which supervises timing of renewal of an event, a record control means which controls a start and a stop of a recorder of record in response to a notice of timing of renewal of an event from a renewal monitor means of an event, A recorder built-in digital broadcasting receiving set having a recording operation means to perform record and a stop of a recorder in response to a notice from a record control means.

Claim 7 The recorder built-in digital broadcasting receiving set according to claim 6 characterized by what operation of a recording start key is answered, and a file is generated for every event, and is recorded on a recorder.

Claim 8 The recorder built-in digital broadcasting receiving set according to claim 6 provided with a copy control monitor means which supervises propriety control information on record of an event.

Detailed Description of the Invention

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Field of the Invention This invention relates to the record method of broadcast, and relates to the recorder built-in digital broadcasting receiving set having the recorder which records the record method which records digital broadcasting like BS digital broadcasting especially, and digital broadcasting.

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Description of the Prior Art Although the satellite broadcasting gestalt (digital broadcasting) by digital transmission is already put in practical use, in this digital broadcasting, the information on a quantity huge at high speed is transmitted by the broadcasting signal transmitted by adoption of highly efficient compression encoding art from a broadcasting station. SI (Service Information) information used for program tuning, such as the information and program name of the information on an image/audio signal (program information) or data broadcasting, a start/finish time of a program, etc. which constitutes the contents of a program, etc. is included in this information transmitted.

0003 Record to mass storage media, such as HDD (Hard Disk Drive), is proposed by JP,11-355686,A in the program of this seed digital broadcasting. Since it is possible to identify each event (program) by above-mentioned SI information when recording a program, record in an

event unit is possible by notifying the timing of renewal of an event to the recording device connected to the television set to built-in or the exterior.

0004 In this case, setting out of the case where it has pointed to the event a priori by request-to-print-out-files record etc., and record of being from the present to the end of an event can be performed. However, when the recording start and stop of broadcast are performed without reserving operation by the directions from the user of continuing and recording a subsequent event from the event seen now, two or more events will be recorded on a single file. In order to extract only the event which he wishes out of this recorded file and to consider it as a new file, complicated work, such as setting out of an edit point and deletion of a garbage, is required of a user's operation and picture recording apparatus.

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Problem(s) to be Solved by the Invention As mentioned above, in the record method of the event of the conventional digital broadcasting. When the recording start and stop of broadcast were performed without reserving operation by the directions from a user, two or more events will be recorded on a single file, and there was a problem that complicated work was required by the reproduction for every event and the recorded edit of an event.

0006 An object of this invention is also it to provide the record method of the digital broadcasting **it is possible and** which can perform editing work, such as reproduction in an event unit, copy, deletion, and rearrangement, and a recorder built-in digital broadcasting receiving set to provide to a user in the record unit which the user was conscious of.

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Means for Solving the Problem To achieve the above objects, a record method of digital broadcasting of an invention concerning claim 1, After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a record method which records a desired transport stream on a recorder so that read-out is possible, operation of a recording start key is answered, a file is generated for every event, and it records on a recorder.

0008A record method of digital broadcasting of an invention concerning claim 2 records management information of a file generated for every event on a recorder in claim 1.

0009A record method of digital broadcasting of an invention concerning claim 3, After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a record method which records a desired transport stream on a recorder so that read-out is possible, Operation of a recording start key is answered, a recorder file which records a transport stream of an event for every event, and an unfilled space file before and behind this recorder file are generated, and it records on a recorder.

0010A record method of digital broadcasting of an invention concerning claim 4 generates a file which records the 2nd event that continues during record of the 1st event at the 1st event in claim 1.

0011A record method of digital broadcasting of an invention concerning claim 5, In claim 1, when record is stopped when a signal of prohibition on record is received during record of the 1st event, and a signal of record permission is received and it is updated by the 2nd event from the 1st event, the 2nd event of a new file is recorded.

0012A recorder built-in digital broadcasting receiving set of an invention concerning claim 6, After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a recorder built-in digital broadcasting receiving set provided with a recorder recorded so that read-out of a desired transport stream is possible, A renewal monitor means of an event which supervises timing of renewal of an event, a record control means which controls a start and a stop of a recorder of record in response to a notice of timing of renewal of an event from a renewal monitor means of an event, It has a recording operation means to perform record and a stop of a recorder in response to a notice from a record control means.

0013 In claim 6, a recorder built-in digital broadcasting receiving set of an invention concerning claim 7 answers operation of a recording start key, generates a file for every event, and records it on a recorder.

0014A recorder built-in digital broadcasting receiving set of an invention concerning claim 8 is provided with a copy control monitor means which supervises propriety control information on record of an event in claim 6.

0015 Since a file is generated according to an event in a stage of record by such composition, it also enables it to also provide to a user in a record unit which a user was conscious of, and to

be possible and to perform editing work, such as reproduction in an event unit, copy, deletion, and rearrangement.

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Embodiment of the Invention The embodiment which starts this invention below is described with reference to drawings.

0017 First, drawing 1 is a block diagram showing the television receiver which contained the tuner corresponding to digital broadcasting, such as mass storage media, such as a hard disk drive (hereafter referred to as HDD), and BS digital.

0018 The signal of digital broadcasting, such as BS digital, is received from the antenna 1, and the packet of the transport stream (hereafter referred to as TS) obtained by tuning in with the tuner 2 is inputted into the decoder 3 containing a TS decoder, an MPEG decoder, etc. It is connected with MPU4 which controls this whole system, and the decoder 3 performs decoding of TS, and decoding of MPEG in response to the command from MPU4. In addition to this, it is connected with the mass recorder 5 for mainly recording TS, RAM6 which record temporary data, ROM7 which record data on un-volatilizing, the infrared light sensing portion 9 which receives the infrared signal from the remote control 8, or the keyboard 10 MPU4.

0019 When displaying the video signal decoded by the decoder 3 on TV footage as it is, format conversion of the decoded video signal is carried out to suitable **** in the graphic processing part 11, and it is further changed into a RGB code by the display processing part 12, and is displayed on the cathode-ray tube 13.

0020 When recording TS on the recorder 5, TS inputted into the decoder 3 is changed into special forms, such as compression, and it is recorded on the recorder 5. Thus, since it is **the object for image presentation, and for HDD record** large and the decoder 3 has two kinds of roles, it may be divided into two or more chips.

0021 The television JONN receiving set which contains an above-mentioned recorder and can perform the digital recording of BS digital broadcasting, The following is possible by dividing automatically and recording by the recording start key (the key provided in the television receiver and/or the remote control is included.) of a program unit, such as a request to print out files, even if it records without being conscious of an event (program). Two or more files made **the list display or** in the unit which the user recorded at this time to manage and edit are realizable by **which is one file / that** displaying like.

0022 When a user wants to display and manage and to edit according to each event, it can realize by displaying by each file basis. That is, the thing which carried out ambiguous record of "Sunday afternoon" is made to display in a list according to an event, and the list display the "movie" from "afternoon news" and "drama" 2:00 from 1:00 is possible. **from 0:00** Since the edit act of deleting only one of two or more events recorded continuously, or copying is possible, it is possible to delete "the "drama" from 1:00" in the above-mentioned example, and to leave other things.

0023 When viewing and listening only to a required event among two or more events recorded continuously, there is no necessity of searching a file from a head and finding an applicable event, and it can view and listen by index operation. When performing edit acts, such as elimination, movement, and a copy, and reproduction in the unit (Sunday afternoon) which recorded these, to a user, it can be operated per record by treating all the recorded files continuously.

0024 Next, the record method by the embodiment of the invention in which an above-mentioned file operation is possible is explained using drawing 2. In this record method, the task of the renewal surveillance task of an event, a record control task, a record task, and a SI information offer task of operation is performed by MPU4. The renewal surveillance task of an event notifies the timing of renewal of an event to a record control task based on the event name in the SI information which MPU4 acquired from the decoder 3, and finish time information / start time. MPU4 controls the start of record, a stop, etc. to the recorder 5, and the record task of a record control task is the recording operation to the recorder 5. A SI information offer task is that MPU4 acquires SI information from the decoder 3.

0025 Drawing 2 shows the flow in the case of continuing and recording the event 1 and the event 2. In drawing 2, it is recording about the event 1 in response to directions of record. During this record, if it consists of SI information of the event 1 acquired beforehand n-second before the finish time of the event 1, the renewal surveillance task of an event will be notified to a record control task (Step S1). The record control task which received this notice creates a file name and a database, and records them on the records management field of the recorder 5. Then, a record control task requires preparation of a new file, in order to record the event 2 on

a record task, and it starts the count of the time of onset of actual record (Step S2). The count of this time of onset can also be performed by the renewal surveillance task of an event.
0026 If it becomes event modification time (time which the event 1 ends and the event 2 starts) by count-up, a record control task will perform write-in start indication of the event 2 with the change of a recorder file to a record task (Step S3). Then, with the directions to a record task from a record control task, a record task stops the writing to the file which recorded the event 1, closes this file, and performs end processing (step S4). From a SI information offer task, in response to offer of the SI information of the event 2, a record control task creates the database of the event 2, and records it similarly with the database of the event 1 (Step S5). In advance of Step S5, a record control task performs completion processing of the database of the event 1 which ended record.
0027 In the above-mentioned step S4, although stop of record of an event and end processing of a file were performed, what is called when **that is reproduced while recording the event 1** it pursues and is under reproduction, a file does not close only by stopping record.
0028 Next, other embodiments of this invention are described using drawing 3. Drawing 3 shows a record method in case the copy guard is given to the event. In this record method, the copy control surveillance task is newly added to drawing 2.
0029 In drawing 3, it is recording about the event 3 in response to directions of record. During this record, if it consists of SI information of the event 3 acquired beforehand n-second before the finish time of the event 3, the renewal surveillance task of an event will be notified to a record control task (Step S10). The record control task which received this notice creates a file name and a database, and records them on the records management field of the recorder 5. Then, a record control task requires preparation of a new file, in order to record the event 4 on a record task, and it starts the count of the time of onset of actual record (Step S11). It is also same in the above-mentioned embodiment having explained that the count of this time of onset can be performed by the renewal surveillance task of an event.
0030 When a copy prohibition portion exists during record of an event, a copy control surveillance task notifies a halt of record to a record control task (Step S12), and the record control task which received the notice notifies a halt of record to a record task (Step 13). A halt of this record is performed irrespective of the timing of renewal of an event. The record task which received this stops record.
0031 When record was resumed here when a copy became possible within the same event, but an event is ended as it is It is not concerned with a copy control state. The update process of the following event 4 is begun (the next file is prepared and updating time is counted).
0032if it comes out in the timing which counts up and changes to a new event, it usually comes out and it is, the change of record to a new file will be operated, but in the case of a copy improper state, this is not performed, but the other processing is similarly performed with a copy being possible. That is, a record control task points to the stop of record of the event 3 to a record task, and the record task which received this performs end processing of record of the event 3 (Step 14). Then, a record control task acquires the SI information of the event 4 newer than a SI information offer task, and creates the database of the event 4 (Step 15).
0033 When a copy becomes possible within the period of the event 4, a copy control management task performs the notice which can be copied to a record control task (Step 16). The record control task which received this notice points to the recording start of the event 4 to a new file to a record task, and a record task performs this (Step 17). It can process like the usual record henceforth by starting record to the file currently prepared.
0034 When it is not able to continue copying to the last of a new event, or when a record stop is carried out, it judges to the stop processing of record with the file sizes (time etc.) by which file record was actually carried out, and, in below constant value, deletion of a file and attached information is performed.
0035 With this record method, as copy good / failure was events, even when it is, the necessity of changing the procedure of file division of renewal of an event is lost. It is just before renewal of an event by judging whether they are invalid files with a file size at the time of this stop, Also when the file of the following event, etc. are already prepared and there is a stop by a user to this timing, an unnecessary file can be deleted by the usual stop processing.
0036 The record methods which receive possible **the above-mentioned copy** / improper are a halt/resumption of as it is record. It is appliable. it can process like the case where an event is updated not copied when an event updates halted -- as it is -- the period of the following event -- the case where it is still a halt altogether -- the period of the following event -- the same processing as the case where all are not able to continue being copied is performed.

0037 Next, the regeneration method of the event by other embodiments of this invention is explained. When reproducing an event, the file by which division recording was carried out according to the event at plurality must be smoothly reproduced as much as possible from being recorded continuously from the first. When changing to the following event like the time of record for the purpose, pretreatment of opening the next file a priori is desirable. When special reproduction is also taken into consideration, the method of preparing the next file immediately after performing reproduction of the present event is preferred.
0038 For a certain reason, reverse direction reproduction also needs to change the file equivalent to the next, whenever the direction of reproductive changes.
0039 Drawing 4 which explains the concrete example of a regeneration method using drawing 4 is a flow chart explaining the regeneration method which reproduces the event recorded on the file divided in the recorder at plurality. In drawing 4, a reproduction control task controls a reproduction task, such as a reproductive start and a stop. A reproduction task reproduces a file.
0040A reproduction task suspends reproduction of the file of the event 5, and it starts reproduction of the file of the event 6 in the time of renewal of an event, i.e., T=t1 in drawing 4. Pointing to preparation of the file of the event 6 reproduced from a reproduction control task next to a reproduction task in advance of renewal of this event, while reproducing the event 5, a reproduction task performs reproduction preparation of the file on which the event 6 was recorded.
0041 The reproduction start of the new event 6 and the reproduction stop of the event 5 are notified to a reproduction control task from a reproduction task (Step S20). The reproduction control task which received this notice directs the reproduction preparation of the file of the event 7 reproduced next to a reproduction task, and a reproduction task performs this (Step 21).
0042 In T=t2, like the above, a reproduction task suspends reproduction of the file of the event 6, and it starts reproduction of the file of the event 7 at the time of renewal of an event. The reproduction start of the new event 7 and the reproduction stop of the event 6 are notified to a reproduction control task from a reproduction task (Step S22). performing the directions without a file since there is no event reproduced next to a reproduction task since the reproduction control task which received this notice is an event of the last which this event 7 reproduces -- a reproduction task -- reproduction preparation of the next file is not performed (Step S23).
0043 At the time of the end of reproduction of the event 7 (T=t3), a reproduction task suspends reproduction of the file of the event 7, and notifies the stop of a file to a reproduction control task (Step S24). In response to this notice, a reproduction control task ends regeneration.
0044 Next, while reproducing the event 2, regeneration when operation of the reverse reproduction of the event 1 is carried out from a user is explained using drawing 5. The same numerals are attached about the same thing as drawing 4. Since Step S20 and Step S21 are the same as that of drawing 4 at the time of updating to the event 6 from the event 5 (T=t1), explanation is omitted.
0045 In T=t4, if operation of reverse reproduction is performed, a reproduction control task will direct the reverse reproduction of the event 1 with reverse reproduction to a reproduction task (Step S25). The reproduction task which received these directions stops the reproduction preparation of the file of the event 6 which was preparing at Step S21, suspends reproduction of the file of the event 6 under reproduction, and starts the reverse reproduction of the file of the event 5. Namely, an event is reproduced from T=t1 in the direction which traces back recording time (Step S26).
0046 Although recorded on one file in each event unit in the record method concerning an above-mentioned embodiment, The margin region of fixed time is provided before and after this file (what is called an edge left for applying paste), this margin region can be managed as another file, and three files can also be created to one recorded event. After record of an event, the user is able to deal with it as an event to one, with a margin region attached, and it is also possible to delete a margin region and to reedit one event into one file. In this record method, it can respond broadly to deal with it with a margin before and after an event by edit of the copy of an event, etc.
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Effect of the Invention According to the invention explained in full detail above, since the file is generated according to the event in the stage of record, it is also possible to provide to a user in the record unit which the user was conscious of, and it is possible to perform editing work,

such as reproduction in an event unit, copy, deletion, and rearrangement.

Field of the Invention This invention relates to the record method of broadcast, and relates to the recorder built-in digital broadcasting receiving set having the recorder which records the record method which records digital broadcasting like BS digital broadcasting especially, and digital broadcasting.

Description of the Prior Art Although the satellite broadcasting gestalt (digital broadcasting) by digital transmission is already put in practical use, in this digital broadcasting, the information on a quantity huge at high speed is transmitted by the broadcasting signal transmitted by adoption of highly efficient compression encoding art from a broadcasting station. SI (Service Information) information used for program tuning, such as the information and program name of the information on an image/audio signal (program information) or data broadcasting, a start/finish time of a program, etc. which constitutes the contents of a program, etc. is included in this information transmitted.
0003 Record to mass storage media, such as HDD (Hard Disk Drive), is proposed by JP,11-355686,A in the program of this seed digital broadcasting. Since it is possible to identify each event (program) by above-mentioned SI information when recording a program, record in an event unit is possible by notifying the timing of renewal of an event to the recording device connected to the television set to built-in or the exterior.
0004 In this case, setting out of the case where it has pointed to the event a priori by request-to-print-out-files record etc., and record of being from the present to the end of an event can be performed. However, when the recording start and stop of broadcast are performed without reserving operation by the directions from the user of continuing and recording a subsequent event from the event seen now, two or more events will be recorded on a single file. In order to extract only the event which he wishes out of this recorded file and to consider it as a new file, complicated work, such as setting out of an edit point and deletion of a garbage, is required of a user's operation and picture recording apparatus.

Effect of the Invention According to the invention explained in full detail above, since the file is generated according to the event in the stage of record, it is also possible to provide to a user in the record unit which the user was conscious of, and it is possible to perform editing work, such as reproduction in an event unit, copy, deletion, and rearrangement.

Problem(s) to be Solved by the Invention As mentioned above, in the record method of the event of the conventional digital broadcasting. When the recording start and stop of broadcast were performed without reserving operation by the directions from a user, two or more events will be recorded on a single file, and there was a problem that complicated work was required by the reproduction for every event and the recorded edit of an event.
0006 An object of this invention is also it to provide the record method of the digital broadcasting **it is possible and** which can perform editing work, such as reproduction in an event unit, copy, deletion, and rearrangement, and a recorder built-in digital broadcasting receiving set to provide to a user in the record unit which the user was conscious of.

Means for Solving the Problem To achieve the above objects, a record method of digital broadcasting of an invention concerning claim 1, After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a record method which records a desired transport stream on a recorder so that read-out is possible, operation of a recording start key is answered, a file is generated for every event, and it records on a recorder.

0008A record method of digital broadcasting of an invention concerning claim 2 records management information of a file generated for every event on a recorder in claim 1.
0009A record method of digital broadcasting of an invention concerning claim 3, After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a record method which records a desired transport stream on a recorder so that read-out is possible, Operation of a recording start key is answered, a recorder file which records a transport stream of an event for every event, and an unfilled space file before and behind this recorder file are generated, and it records on a recorder.
0010A record method of digital broadcasting of an invention concerning claim 4 generates a file which records the 2nd event that continues during record of the 1st event at the 1st event in claim 1.
0011A record method of digital broadcasting of an invention concerning claim 5, In claim 1, when record is stopped when a signal of prohibition on record is received during record of the 1st event, and a signal of record permission is received and it is updated by the 2nd event from the 1st event, the 2nd event of a new file is recorded.
0012A recorder built-in digital broadcasting receiving set of an invention concerning claim 6, After restoring to a transport stream containing a multiplexed packet which receives a digital broadcasting signal and bears video information and speech information, In a recorder built-in digital broadcasting receiving set provided with a recorder recorded so that read-out of a desired transport stream is possible, A renewal monitor means of an event which supervises timing of renewal of an event, a record control means which controls a start and a stop of a recorder of record in response to a notice of timing of renewal of an event from a renewal monitor means of an event, It has a recording operation means to perform record and a stop of a recorder in response to a notice from a record control means.
0013 In claim 6, a recorder built-in digital broadcasting receiving set of an invention concerning claim 7 answers operation of a recording start key, generates a file for every event, and records it on a recorder.
0014A recorder built-in digital broadcasting receiving set of an invention concerning claim 8 is provided with a copy control monitor means which supervises propriety control information on record of an event in claim 6.
0015 Since a file is generated according to an event in a stage of record by such composition, it also enables it to also provide to a user in a record unit which a user was conscious of, and to be possible and to perform editing work, such as reproduction in an event unit, copy, deletion, and rearrangement.
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Embodiment of the Invention The embodiment which starts this invention below is described with reference to drawings.
0017 First, drawing 1 is a block diagram showing the television receiver which contained the tuner corresponding to digital broadcasting, such as mass storage media, such as a hard disk drive (hereafter referred to as HDD), and BS digital.
0018 The signal of digital broadcasting, such as BS digital, is received from the antenna 1, and the packet of the transport stream (hereafter referred to as TS) obtained by tuning in with the tuner 2 is inputted into the decoder 3 containing a TS decoder, an MPEG decoder, etc. It is connected with MPU4 which controls this whole system, and the decoder 3 performs decoding of TS, and decoding of MPEG in response to the command from MPU4. In addition to this, it is connected with the mass recorder 5 for mainly recording TS, RAM6 which record temporary data, ROM7 which record data on un-volatilizing, the infrared light sensing portion 9 which receives the infrared signal from the remote control 8, or the keyboard 10 MPU4.
0019 When displaying the video signal decoded by the decoder 3 on TV footage as it is, format conversion of the decoded video signal is carried out to suitable **** in the graphic processing part 11, and it is further changed into a RGB code by the display processing part 12, and is displayed on the cathode-ray tube 13.
0020 When recording TS on the recorder 5, TS inputted into the decoder 3 is changed into special forms, such as compression, and it is recorded on the recorder 5. Thus, since it is **the object for image presentation, and for HDD record** large and the decoder 3 has two kinds of roles, it may be divided into two or more chips.
0021 The television JONN receiving set which contains an above-mentioned recorder and can perform the digital recording of BS digital broadcasting, The following is possible by dividing automatically and recording by the recording start key (the key provided in the television

receiver and/or the remote control is included.) of a program unit, such as a request to print out files, even if it records without being conscious of an event (program). Two or more files made **the list display or** in the unit which the user recorded at this time to manage and edit are realizable by **which is one file / that** displaying like.

0022 When a user wants to display and manage and to edit according to each event, it can realize by displaying by each file basis. That is, the thing which carried out ambiguous record of "Sunday afternoon" is made to display in a list according to an event, and the list display the "movie" from "afternoon news" and "drama" 2:00 from 1:00 is possible. **from 0:00** Since the edit act of deleting only one of two or more events recorded continuously, or copying is possible, it is possible to delete "the "drama" from 1:00" in the above-mentioned example, and to leave other things.

0023 When viewing and listening only to a required event among two or more events recorded continuously, there is no necessity of searching a file from a head and finding an applicable event, and it can view and listen by index operation. When performing edit acts, such as elimination, movement, and a copy, and reproduction in the unit (Sunday afternoon) which recorded these, to a user, it can be operated per record by treating all the recorded files continuously.

0024 Next, the record method by the embodiment of the invention in which an above-mentioned file operation is possible is explained using drawing 2. In this record method, the task of the renewal surveillance task of an event, a record control task, a record task, and a SI information offer task of operation is performed by MPU4. The renewal surveillance task of an event notifies the timing of renewal of an event to a record control task based on the event name in the SI information which MPU4 acquired from the decoder 3, and finish time information / start time. MPU4 controls the start of record, a stop, etc. to the recorder 5, and the record task of a record control task is the recording operation to the recorder 5. A SI information offer task is that MPU4 acquires SI information from the decoder 3.

0025 Drawing 2 shows the flow in the case of continuing and recording the event 1 and the event 2. In drawing 2, it is recording about the event 1 in response to directions of record. During this record, if it consists of SI information of the event 1 acquired beforehand n-second before the finish time of the event 1, the renewal surveillance task of an event will be notified to a record control task (Step S1). The record control task which received this notice creates a file name and a database, and records them on the records management field of the recorder 5. Then, a record control task requires preparation of a new file, in order to record the event 2 on a record task, and it starts the count of the time of onset of actual record (Step S2). The count of this time of onset can also be performed by the renewal surveillance task of an event.

0026 If it becomes event modification time (time which the event 1 ends and the event 2 starts) by count-up, a record control task will perform write-in start indication of the event 2 with the change of a recorder file to a record task (Step S3). Then, with the directions to a record task from a record control task, a record task stops the writing to the file which recorded the event 1, closes this file, and performs end processing (step S4). From a SI information offer task, in response to offer of the SI information of the event 2, a record control task creates the database of the event 2, and records it similarly with the database of the event 1 (Step S5). In advance of Step S5, a record control task performs completion processing of the database of the event 1 which ended record.

0027 In the above-mentioned step S4, although stop of record of an event and end processing of a file were performed, what is called when **that is reproduced while recording the event 1** it pursues and is under reproduction, a file does not close only by stopping record.

0028 Next, other embodiments of this invention are described using drawing 3. Drawing 3 shows a record method in case the copy guard is given to the event. In this record method, the copy control surveillance task is newly added to drawing 2.

0029 In drawing 3, it is recording about the event 3 in response to directions of record. During this record, if it consists of SI information of the event 3 acquired beforehand n-second before the finish time of the event 3, the renewal surveillance task of an event will be notified to a record control task (Step S10). The record control task which received this notice creates a file name and a database, and records them on the records management field of the recorder 5. Then, a record control task requires preparation of a new file, in order to record the event 4 on a record task, and it starts the count of the time of onset of actual record (Step S11). It is also same in the above-mentioned embodiment having explained that the count of this time of onset can be performed by the renewal surveillance task of an event.

0030 When a copy prohibition portion exists during record of an event, a copy control

surveillance task notifies a halt of record to a record control task (Step S12), and the record control task which received the notice notifies a halt of record to a record task (Step 13). A halt of this record is performed irrespective of the timing of renewal of an event. The record task which received this stops record.

0031 When record was resumed here when a copy became possible within the same event, but an event is ended as it is It is not concerned with a copy control state. The update process of the following event 4 is begun (the next file is prepared and updating time is counted).

0032if it comes out in the timing which counts up and changes to a new event, it usually comes out and it is, the change of record to a new file will be operated, but in the case of a copy improper state, this is not performed, but the other processing is similarly performed with a copy being possible. That is, a record control task points to the stop of record of the event 3 to a record task, and the record task which received this performs end processing of record of the event 3 (Step 14). Then, a record control task acquires the SI information of the event 4 newer than a SI information offer task, and creates the database of the event 4 (Step 15).

0033 When a copy becomes possible within the period of the event 4, a copy control management task performs the notice which can be copied to a record control task (Step 16). The record control task which received this notice points to the recording start of the event 4 to a new file to a record task, and a record task performs this (Step 17). It can process like the usual record henceforth by starting record to the file currently prepared.

0034 When it is not able to continue copying to the last of a new event, or when a record stop is carried out, it judges to the stop processing of record with the file sizes (time etc.) by which file record was actually carried out, and, in below constant value, deletion of a file and attached information is performed.

0035 With this record method, as copy good / failure was events, even when it is, the necessity of changing the procedure of file division of renewal of an event is lost. It is just before renewal of an event by judging whether they are invalid files with a file size at the time of this stop, Also when the file of the following event, etc. are already prepared and there is a stop by a user to this timing, an unnecessary file can be deleted by the usual stop processing.

0036 The record methods which receive possible **the above-mentioned copy** / improper are a halt/resumption of as it is record. It is appliable. it can process like the case where an event is updated not copied when an event updates halted -- as it is -- the period of the following event -- the case where it is still a halt altogether -- the period of the following event -- the same processing as the case where all are not able to continue being copied is performed.

0037 Next, the regeneration method of the event by other embodiments of this invention is explained. When reproducing an event, the file by which division recording was carried out according to the event at plurality must be smoothly reproduced as much as possible from being recorded continuously from the first. When changing to the following event like the time of record for the purpose, pretreatment of opening the next file a priori is desirable. When special reproduction is also taken into consideration, the method of preparing the next file immediately after performing reproduction of the present event is preferred.

0038 For a certain reason, reverse direction reproduction also needs to change the file equivalent to the next, whenever the direction of reproductive changes.

0039 Drawing 4 which explains the concrete example of a regeneration method using drawing 4 is a flow chart explaining the regeneration method which reproduces the event recorded on the file divided in the recorder at plurality. In drawing 4, a reproduction control task controls a reproduction task, such as a reproductive start and a stop. A reproduction task reproduces a file.

0040A reproduction task suspends reproduction of the file of the event 5, and it starts reproduction of the file of the event 6 in the time of renewal of an event, i.e., T=t1 in drawing 4. Pointing to preparation of the file of the event 6 reproduced from a reproduction control task next to a reproduction task in advance of renewal of this event, while reproducing the event 5, a reproduction task performs reproduction preparation of the file on which the event 6 was recorded.

0041 The reproduction start of the new event 6 and the reproduction stop of the event 5 are notified to a reproduction control task from a reproduction task (Step S20). The reproduction control task which received this notice directs the reproduction preparation of the file of the event 7 reproduced next to a reproduction task, and a reproduction task performs this (Step 21).

0042 In T=t2, like the above, a reproduction task suspends reproduction of the file of the event 6, and it starts reproduction of the file of the event 7 at the time of renewal of an event. The

reproduction start of the new event 7 and the reproduction stop of the event 6 are notified to a reproduction control task from a reproduction task (Step S22). performing the directions without a file since there is no event reproduced next to a reproduction task since the reproduction control task which received this notice is an event of the last which this event 7 reproduces -- a reproduction task -- reproduction preparation of the next file is not performed (Step S23).

0043 At the time of the end of reproduction of the event 7 (T=t3), a reproduction task suspends reproduction of the file of the event 7, and notifies the stop of a file to a reproduction control task (Step S24). In response to this notice, a reproduction control task ends regeneration.

0044 Next, while reproducing the event 2, regeneration when operation of the reverse reproduction of the event 1 is carried out from a user is explained using drawing 5. The same numerals are attached about the same thing as drawing 4. Since Step S20 and Step S21 are the same as that of drawing 4 at the time of updating to the event 6 from the event 5 (T=t1), explanation is omitted.

0045 In T=t4, if operation of reverse reproduction is performed, a reproduction control task will direct the reverse reproduction of the event 1 with reverse reproduction to a reproduction task (Step S25). The reproduction task which received these directions stops the reproduction preparation of the file of the event 6 which was preparing at Step S21, suspends reproduction of the file of the event 6 under reproduction, and starts the reverse reproduction of the file of the event 5. Namely, an event is reproduced from T=t1 in the direction which traces back recording time (Step S26).

0046 Although recorded on one file in each event unit in the record method concerning an above-mentioned embodiment, The margin region of fixed time is provided before and after this file (what is called an edge left for applying paste), this margin region can be managed as another file, and three files can also be created to one recorded event. After record of an event, the user is able to deal with it as an event to one, with a margin region attached, and it is also possible to delete a margin region and to reedit one event into one file. In this record method, it can respond broadly to deal with it with a margin before and after an event by edit of the copy of an event, etc.

Brief Description of the Drawings

Drawing 1 The block diagram showing the composition of the television receiver concerning an embodiment of the invention.

Drawing 2 The flow chart which shows the record method concerning an embodiment of the invention.

Drawing 3 The flow chart which shows the record method concerning other embodiments of this invention.

Drawing 4 The flow chart which shows the regeneration method concerning other embodiments of this invention.

Drawing 5 The flow chart which shows the regeneration method concerning other embodiments of this invention.

Description of Notations

1 -- Antenna 2 -- Tuner
3 -- Decoder 4 -- MPU
5 -- Recorder 6 -- RAM
7 -- ROM 8 -- Remote control
9 -- Infrared light sensing portion 10 -- Keyboard
11 -- Image processing portion 12 -- Display processing part
13 -- Cathode-ray tube

Drawing 1

For drawings please refer to the original document.

Drawing 2

For drawings please refer to the original document.

Drawing 3

For drawings please refer to the original document.

Drawing 4

For drawings please refer to the original document.

Drawing 5

For drawings please refer to the original document.

For drawings please refer to the original document.

[English Translation of Cited Document 1]

[0021]

The television receiver which contains an above-mentioned recorder and can perform the digital recording of BS digital broadcasting, is capable of performing the following matter by automatically dividing and recording a program, by the recording start key (the key provided in the television receiver and/or the remote control is included.) rather than reservation of a program unit even if event (program) is recorded without being conscious of it.

If a user want to display a list of programs, manage and edit programs in a recorded unit, two or more files which are created at this time are displayed as if these are one file.

[0023]

When viewing and listening only to a required event among two or more events recorded continuously, there is no necessity of searching a file from a start and finding an applicable event, and a user can view and listen an event by index operation.

When performing edit acts such as elimination, movement and copy, and reproduction in the unit (Sunday afternoon) which these are recorded, operation per record for a user is possible by continuously treating all the recorded files.

[0025]

Fig 2 shows the flow in the case of continuously recording the event 1 and the event 2. In fig 2, recording about the event 1 is performed in response to directions of record. During this record, if a situation of n-second before the finish time of the event 1 is arrived based on the SI information of the event 1 acquired beforehand, an event update surveillance task will notify this to a record control task (Step S1).

The record control task which received this notice creates a file name and a database, and records them on the records management field of the recorder 5. Then, the record control task requires

preparation of a new file in order to record the event 2 on a record task, and starts the count of the start time of actual record (Step S2). This count of the start time can also be performed by the event update surveillance task.

[0037]

Next, the regeneration method of the event according to other embodiments of the present invention is explained. When reproducing an event, files severally divided and recorded with respect to the event must be smoothly reproduced as much as possible since these are originally recorded continuously. For the purpose, when changing to the following event as well as the time of record, preprocessing of opening the next file a priori is desirable. When special reproduction is also taken into consideration, the method of preparing the next file immediately after performing reproduction of the present event is preferred.

[0038]

For a certain reason of reverse direction reproduction, changing the file equivalent to the next needs to be performed, whenever the direction of reproductive changes.

[0039]

Fig 4 explains the concrete example of a regeneration method. fig 4 is a flow chart explaining the regeneration method for reproducing the event recorded on the file severally divided in the recorder. In fig 4, a reproduction control task controls a reproduction task such as a reproductive start and stop. A reproduction task reproduces a file.

[0040]

A reproduction task suspends reproduction of the file of the event 5 and starts reproduction of the file of the event 6, at the time of update of an event, i.e., T=t1 in fig 4. In advance of update of this event, preparation of the file of the event 6 to be reproduced next is instructed from the reproduction control task to the reproduction task during reproduction of the event 5, the

reproduction task performs reproduction preparation of the file on which the event 6 was recorded.

[0041]

The reproduction start of the new event 6 and the reproduction stop of the event 5 are notified to the reproduction control task from the reproduction task (Step S20). The reproduction control task which received this notice directs the reproduction preparation of the file of the event 7 to be reproduced next to the reproduction task, and the reproduction task performs this (Step 21).

[0042]

At the time of update of an event, in T=t2, similar to the above mentioned, the reproduction task suspends reproduction of the file of the event 6 and starts reproduction of the file of the event 7. The reproduction start of the new event 7 and the reproduction stop of the event 6 are notified to the reproduction control task from the reproduction task (Step S22).

The reproduction control task which received this notice, directs no-file meaning that there is no event to be reproduced next to the reproduction task since this event 7 is a last event to be reproduced, and the reproduction task does not perform the reproduction preparation of the next file (Step S23).

[0043]

At the time of the end of reproduction of the event 7 (T=t3), the reproduction task suspends reproduction of the file of the event 7 and notifies the stop of the file to the reproduction control task (Step S24). In response to this notice, the reproduction control task ends regeneration.

[0044]

Next, fig 5 explains reproducing process when operation of the reverse reproduction of the event 1 is carried out from a user during reproduction of event 2. The same numerals are attached about the same thing as fig 4. Since the time of updating from the event 5 to the event 6 (T=t1), step S20 and step S21 are the same as that of fig 4, explanation is omitted.

[0045]

In T=t4, if operation of reverse reproduction is performed, the reproduction control task will direct the reverse reproduction of the event 1 with reverse reproduction to the reproduction task (Step S25). The reproduction task which received these directions stops the reproduction preparation of the file of the event 6 which was preparing at Step S21, suspends reproduction of the file of the event 6 under reproduction and starts the reverse reproduction of the file of the event 5. Namely, an event is reproduced from T=t1 in the direction which traces back the recording time (Step S26).

[0046]

In the recording method according to above-mentioned embodiment, although recording is performed on one file in each event unit, the margin region of fixed time is provided before and after this file, this margin region can be managed as another file, and three files can also be created to one recorded event.

After recording of an event, the user is able to deal with it as one event attached with the margin region, and the user is also possible to delete the margin region and to reedit one event into one file. This recording method can address broadly to have a margin before and after an event in the edit of the copy of an event, etc.

[0047]

[Effect of the Invention]

According to the present invention explained in detail above, since the file is generated with regard to the event in the stage of record, it is also possible to provide files to a user in the record unit in which the user is interested, and it is possible to perform editing work such as reproduction, copy, deletion and rearrangement in an event unit.

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(21)Application number : 2001-390995
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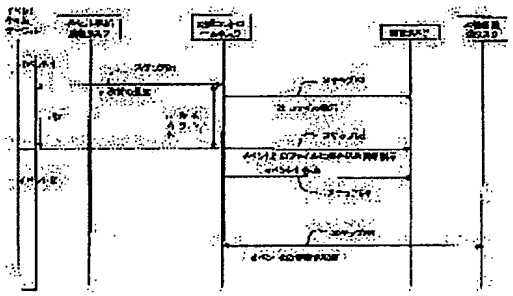
(71)Applicant : TOSHIBA CORP
(72)Inventor : TOMITA TAKESHI

(54) METHOD FOR RECORDING DIGITAL BROADCASTING AND DIGITAL BROADCASTING RECEIVER WITH BUILT-IN RECORDER

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a digital broadcasting recording method which provides a digital broadcasting to a user by the unit of recording which the user is interested in and performs an editing work such as reproduction by the event, copying, erasing and re-arranging and also to provide a digital broadcasting receiver with a built-in recorder.
SOLUTION: A recording control task requests the preparation of a new file to a recording task in order to record the event 2 at a time n-seconds before the end of the event 1 (step S2). In the case of event updating time, the recording control task indicates the recording task to changeover a recording file and also to start writing the event 2 (step S3). Then the recording task stops writing to the file where the event 1 is recorded, closes the file and performs a completion processing (step S4).



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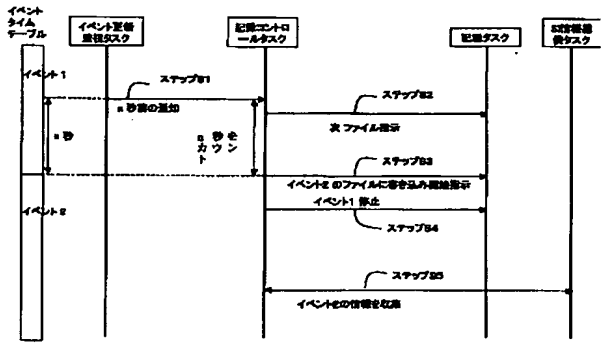
(54)【発明の名称】　デジタル放送の記録方法および記録装置内蔵型デジタル放送受信装置

(57)【要約】
【課題】ユーザに対してはユーザが意識した記録単位で提供することも可能であり、イベント単位での再生、コピー、削除、並べ替え等の編集作業を行うことが可能なデジタル放送の記録方法および記録装置内蔵型デジタル放送受信装置を提供することを目的とする。
【解決手段】イベント１の終了時刻のｎ秒前になると、記録コントロールタスクは記録タスクにイベント２を記録するために新たなファイルの準備を要求する（ステップＳ２）。イベント更新時刻となると、記録コントロールタスクは記録タスクに対して記録ファイルの切り替えと共にイベント２の書き込み開始指示を行う（ステップＳ３）。この後、記録タスクはイベント１を記録したファイルへの書き込みを停止し、このファイルを閉じて終了処理を行う（ステップＳ４）。



【特許請求の範囲】
【請求項１】デジタル放送信号を受信し、映像情報および音声情報を担う多重化されたパケットを含むトランスポート・ストリームを復調した後に、所望のトランスポート・ストリームを記録装置に読出し可能に記録する記録方法において、録画開始キーの操作に応答して、イベント毎にファイルを生成して記録装置に記録することを特徴とするデジタル放送の記録方法。
【請求項２】イベント毎に生成されたファイルの管理情報を記録装置に記録することを特徴とする請求項１記載のデジタル放送の記録方法。
【請求項３】デジタル放送信号を受信し、映像情報および音声情報を担う多重化されたパケットを含むトランスポート・ストリームを復調した後に、所望のトランスポート・ストリームを記録装置に読出し可能に記録する記録方法において、録画開始キーの操作に応答して、イベント毎にイベントのトランスポート・ストリームを記録する記録ファイルとこの記録ファイルの前後の余白ファイルとを生成して記録装置に記録することを特徴とするデジタル放送の記録方法。
【請求項４】第１のイベントの記録中に、第１のイベントに引き続く第２のイベントを記録するファイルを生成することを特徴とする請求項１記載のデジタル放送の記録方法。
【請求項５】第１のイベントの記録中に、記録禁止の信号を受信した場合に記録を停止すると共に、記録許可の信号を受信した際に、第１のイベントから第２のイベントに更新されている場合は、新たなファイルの第２のイベントを記録することを特徴とする請求項１記載のデジタル放送の記録方法。
【請求項６】デジタル放送信号を受信し、映像情報および音声情報を担う多重化されたパケットを含むトランスポート・ストリームを復調した後に、所望のトランスポート・ストリームを読出し可能に記録する記録装置を備えた記録装置内蔵型デジタル放送受信装置において、イベントの更新のタイミングを監視するイベント更新監視手段、イベント更新監視手段からのイベントの更新のタイミングの通知を受けて記録装置の記録の開始および停止を制御する記録コントロール手段、記録コントロール手段からの通知を受けて記録装置の記録および停止を行う記録動作手段とを有することを特徴とする記録装置内蔵型デジタル放送受信装置。
【請求項７】録画開始キーの操作に応答して、イベント毎にファイルを生成して記録装置に記録することを特徴とする請求項６記載の記録装置内蔵型デジタル放送受信装置。
【請求項８】イベントの記録の可否制御情報を監視するコピー制御監視手段を備えることを特徴とする請求項６記載の記録装置内蔵型デジタル放送受信装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、放送の記録方法に係り、特に、ＢＳデジタル放送のようなデジタル放送を記録する記録方法およびデジタル放送を記録する記録装置を内蔵した記録装置内蔵型デジタル放送受信装置に関する。
【０００２】
【従来の技術】デジタル伝送による衛星放送形態（デジタル放送）が既に実用化されているが、このデジタル放送では、高能率圧縮符号化技術の採用によって、放送局から送信される放送信号により高速に膨大な量の情報が伝送されている。この伝送される情報には、番組のコンテンツを構成する映像／音声信号の情報（番組情報）やデータ放送の情報や番組名や番組の開始／終了時刻など番組選局などに利用されるＳＩ（Ｓｅｒｖｉｃｅ Ｉｎｆｏｒｍａｔｉｏｎ）情報が含まれる。
【０００３】この種デジタル放送の番組をＨＤＤ（Ｈａｒｄ Ｄｉｓｋ Ｄｒｉｖｅ）などの大容量の蓄積メディアへの記録が特開平１１－３５５６８６号に提案されている。番組の記録に際しては、上述のＳＩ情報により、個々のイベント（番組）を識別することが可能であることから、イベントの更新のタイミングをテレビジョン受信機に内蔵または外部に接続された記録機器に通知することにより、イベント単位での記録が可能である。
【０００４】この場合、予約記録などで事前にイベントを指示してある場合や、現在からイベントの終了までといった記録の設定は出来る。しかし、予約動作無しで、今見ているイベントからその後のイベントを続けて記録するなどのユーザからの指示により放送の記録開始や停止が行われる場合は、複数のイベントが単一のファイルに記録されてしまう。この記録されたファイルの中から希望するイベントだけを抜き出し、新たなファイルとする為には、ユーザの操作および録画機器は、編集ポイントの設定、不要部分の削除など複雑な作業を要求される。
【０００５】
【発明が解決しようとする課題】上述の様に、従来のデジタル放送のイベントの記録方法では、予約動作無しで、ユーザからの指示により放送の記録開始や停止が行われる場合は、複数のイベントが単一のファイルに記録されてしまい、イベント毎の再生や記録されたイベントの編集に複雑な作業を要求される問題点があった。
【０００６】本発明はユーザに対してはユーザが意識した記録単位で提供することも可能であり、イベント単位での再生、コピー、削除、並べ替え等の編集作業を行うことが可能なデジタル放送の記録方法および記録装置内蔵型デジタル放送受信装置を提供することを目的とする。
【０００７】
【課題を解決するための手段】上記目的を達成するため

に、請求項１に係る発明のデジタル放送の記録方法は、デジタル放送信号を受信し、映像情報および音声情報を担う多重化されたパケットを含むトランスポート・ストリームを復調した後に、所望のトランスポート・ストリームを記録装置に読出し可能に記録する記録方法において、録画開始キーの操作に応答して、イベント毎にファイルを生成して記録装置に記録することを特徴とする。

【０００８】また、請求項２に係る発明のデジタル放送の記録方法は、請求項１において、イベント毎に生成されたファイルの管理情報を記録装置に記録することを特徴とする。

【０００９】また、請求項３に係る発明のデジタル放送の記録方法は、デジタル放送信号を受信し、映像情報および音声情報を担う多重化されたパケットを含むトランスポート・ストリームを復調した後に、所望のトランスポート・ストリームを記録装置に読出し可能に記録する記録方法において、録画開始キーの操作に応答して、イベント毎にイベントのトランスポート・ストリームを記録する記録ファイルとこの記録ファイルの前後の余白ファイルとを生成して記録装置に記録することを特徴とする。

【００１０】また、請求項４に係る発明のデジタル放送の記録方法は、請求項１において、第１のイベントの記録中に、第１のイベントに引き続く第２のイベントを記録するファイルを生成することを特徴とする。

【００１１】また、請求項５に係る発明のデジタル放送の記録方法は、請求項１において、第１のイベントの記録中に、記録禁止の信号を受信した場合に記録を停止すると共に、記録許可の信号を受信した際に、第１のイベントから第２のイベントに更新されている場合は、新たなファイルの第２のイベントを記録することを特徴とする。

【００１２】また、請求項６に係る発明の記録装置内蔵型デジタル放送受信装置は、デジタル放送信号を受信し、映像情報および音声情報を担う多重化されたパケットを含むトランスポート・ストリームを復調した後に、所望のトランスポート・ストリームを読出し可能に記録する記録装置を備えた記録装置内蔵型デジタル放送受信装置において、イベントの更新のタイミングを監視するイベント更新監視手段、イベント更新監視手段からのイベントの更新のタイミングの通知を受けて記録装置の記録の開始および停止を制御する記録コントロール手段、記録コントロール手段からの通知を受けて記録装置の記録および停止を行う記録動作手段とを有することを特徴とする。

【００１３】また、請求項７に係る発明の記録装置内蔵型デジタル放送受信装置は、請求項６において、録画開始キーの操作に応答して、イベント毎にファイルを生成して記録装置に記録することを特徴とする。

【００１４】また、請求項８に係る発明の記録装置内蔵型デジタル放送受信装置は、請求項６において、イベントの記録の可否制御情報を監視するコピー制御監視手段を備えることを特徴とする。

【００１５】このような構成により、 記録の段階でイベント別にファイルが生成されているため、ユーザに対してはユーザが意識した記録単位で提供することも可能であり、イベント単位での再生、コピー、削除、並べ替え等の編集作業を行うことも可能となる。

【００１６】

【発明の実施の形態】以下本発明に係る実施の形態を、図面を参照して説明する。

【００１７】まず、図１は、ハードディスクドライブ（以下、ＨＤＤと呼ぶ）等の大容量記憶媒体およびＢＳデジタル等のデジタル放送対応チューナーを内蔵したテレビジョン受像機を示すブロック図である。

【００１８】アンテナ１からＢＳデジタル等のデジタル放送の信号を受信し、チューナ２によって選局し、得られたトランスポートストリーム（以下、ＴＳと呼ぶ）のパケットを、ＴＳデコーダーやＭＰＥＧデコーダー等を含むデコーダ３に入力する。デコーダ３はこのシステム全体を制御するＭＰＵ４と接続されており、ＭＰＵ４からの命令を受けてＴＳのデコードおよびＭＰＥＧのデコードを行う。ＭＰＵ４にはその他、ＴＳを主に記録するための大容量の記録装置５や、一時的なデータを記録するＲＡＭ６、不揮発にデータを記録するＲＯＭ７、リモコン８からの赤外線信号を受信する赤外線受光部９やキーボード１０と接続されている。

【００１９】デコーダ３でデコードされた映像信号をそのままテレビ画面に表示する場合、デコードされた映像信号を映像処理部１１で適切な画郭にフォーマット変換し、さらに表示処理部１２でＲＧＢ信号に変換されてブラウン管１３に表示される。

【００２０】ＴＳを記録装置５に記録する場合には、デコーダ３に入力されたＴＳを、圧縮等特殊な形式に変換して記録装置５に記録される。このようにデコーダ３は、映像提示用とＨＤＤ記録用の大きく２通りの役割があるため、２つ以上のチップに分けられることもある。

【００２１】上述の記録装置を内蔵し、ＢＳデジタル放送のデジタル記録が出来るテレビジョンン受像機は、番組単位の予約などではなく録画開始キー（テレビジョン受像機および／またはリモコンに設けられているキーを含む。）によって、イベント（番組）を意識すること無く記録したものであっても、自動的に分割して記録する事によって以下のような事が可能である。ユーザが記録した単位でリスト表示や管理、編集したい場合はこの時に出来た複数のファイルを１つのファイルであるかのように表示することによって実現できる。

【００２２】また、ユーザが個々のイベント別に表示、管理、編集したい場合はそれぞれのファイル単位で表示することで実現できる。すなわち、「日曜日の午後」と

いった曖昧な記録をした物を、イベント別にリスト表示させて０：００からの「午後のニュース」、１：００からの「ドラマ」２：００からの「映画」 といったリスト表示が可能である。連続して記録した複数のイベントのうち１つだけ削除したりコピーするなどの編集行為が可能なために上記例で” １：００からの「ドラマ」” のみを削除して他の物を残すことが可能である。

【００２３】さらに、連続して記録した複数のイベントのうち必要なイベントのみを視聴する場合、ファイルを先頭からサーチして該当イベントを見つける必要が無く、インデックス操作で視聴することが出来る。これらを記録した単位（日曜の午後）で消去、移動、コピーなどの編集行為や、再生を行なう場合は記録した全てのファイルを連続して扱うことでユーザに対しては記録単位で操作できる事となる。

【００２４】次に、図２を用いて、上述のファイル操作が可能な本発明の実施の形態による記録方法を説明する。この記録方法では、ＭＰＵ４により、イベント更新監視タスク、記録コントロールタスク、記録タスク、ＳＩ情報提供タスクの動作タスクが実行される。イベント更新監視タスクは、ＭＰＵ４がデコーダ３から取得したＳＩ情報におけるイベント名、終了時刻情報／開始時刻に基づいて、イベントの更新のタイミングを記録コントロールタスクに通知するものである。記録コントロールタスクは、ＭＰＵ４が記録装置５に対して、記録の開始、停止などをコントロールするものであり、記録タスクは、記録装置５に対する記録動作である。ＳＩ情報提供タスクはＭＰＵ４がデコーダ３からＳＩ情報を取得することである。

【００２５】図２はイベント１とイベント２を継続して記録する場合のフローを示す。図２において、記録の指示を受けてイベント１について記録を行っている。この記録中、事前に取得したイベント１のＳＩ情報からイベント１の終了時刻のｎ秒前になると、イベント更新監視タスクは記録コントロールタスクに通知する（ステップＳ１）。この通知を受けた記録コントロールタスクは、ファイル名、データベースを作成し、記録装置５の記録情報管理領域に記録する。この後、記録コントロールタスクは記録タスクにイベント２を記録するために新たなファイルの準備を要求し、実際の記録の開始時間のカウントを開始する（ステップＳ２）。この開始時間のカウントはイベント更新監視タスクで行うこともできる。

【００２６】カウントアップによりイベント更新時刻（イベント１が終了し、イベント２が開始する時刻）となると、記録コントロールタスクは記録タスクに対して記録ファイルの切り替えと共にイベント２の書き込み開始指示を行う（ステップＳ３）。この後、記録コントロールタスクから記録タスクへの指示により、記録タスクはイベント１を記録したファイルへの書き込みを停止し、このファイルを閉じて終了処理を行う（ステップＳ４）。ＳＩ情報提供タスクからイベント２のＳＩ情報の提供を受けて、記録コントロールタスクはイベント２のデータベースを作成し、イベント１のデータベースと同様に記録する（ステップＳ５）。ステップＳ５に先立ち、記録コントロールタスクは記録を終了したイベント１のデータベースの完成処理を行う。

【００２７】上記ステップＳ４において、イベントの記録の停止とファイルの終了処理を行ったが、イベント１を記録しながら再生する、いわゆる追いかけ再生中の場合、記録を停止するのみでファイルは閉じない。

【００２８】次に、本発明の他の実施の形態について、図３を用いて説明する。図３はイベントにコピーガードが付されている場合の記録方法を示す。この記録方法では、図２にコピー制御監視タスクが新たに追加されている。

【００２９】図３において、記録の指示を受けてイベント３について記録を行っている。この記録中、事前に取得したイベント３のＳＩ情報からイベント３の終了時刻のｎ秒前になると、イベント更新監視タスクは記録コントロールタスクに通知する（ステップＳ１０）。この通知を受けた記録コントロールタスクは、ファイル名、データベースを作成し、記録装置５の記録情報管理領域に記録する。この後、記録コントロールタスクは記録タスクにイベント４を記録するために新たなファイルの準備を要求し、実際の記録の開始時間のカウントを開始する（ステップＳ１１）。この開始時間のカウントはイベント更新監視タスクで行うこともできることは、前述の実施の形態で説明したと同様である。

【００３０】イベントの記録中に、コピー禁止な部分が存在した場合、コピー制御監視タスクは記録コントロールタスクに対して記録の一時停止を通知し（ステップＳ１２）、通知を受けた記録コントロールタスクは記録タスクに対して、記録の一時停止を通知する（ステップ１３）。この記録の一時停止はイベントの更新のタイミングに係らず実行される。これを受けた記録タスクは記録を停止する。

【００３１】同一イベント内でコピー可能になった場合はここで記録を再開するが、そのままイベントが終了になった場合は コピー制御状態に関わらず 次のイベント４の更新処理を始める（次のファイルの準備を行い、更新時間をカウントする）。

【００３２】カウントアップし新しいイベントに切り替わるタイミングにおいてで通常であれば新しいファイルへの記録の切り替えの操作を行なうが、コピー不可状態の場合はこれを行なわず、それ以外の処理はコピー可能と同様に行なう。即ち、記録コントロールタスクは記録タスクに対してイベント３の記録の停止を指示し、これを受けた記録タスクはイベント３の記録の終了処理を行う（ステップ１４）。その後、記録コントロールタスクはＳＩ情報提供タスクより新しいイベント４のＳＩ情報

を取得して、イベント４のデータベースを作成する（ステップ１５）。

【００３３】イベント４の期間内にコピー可能になった場合は、コピー制御管理タスクは記録コントロールタスクに対して、コピー可の通知を行う（ステップ１６）。この通知を受けた記録コントロールタスクは記録タスクに対して新しいファイルへのイベント４の記録開始を指示し、記録タスクはこれを実行する（ステップ１７）。用意されているファイルに記録を開始することで以降、通常の記録と同様に処理できる。

【００３４】新しいイベントの最後までコピー不可のままであった場合、もしくは記録停止された場合、記録の停止処理に実際にファイル記録されたファイルサイズ（時間など）で判断し一定値以下の場合はファイル、付属情報の削除処理を行なう。

【００３５】この記録方法により、コピー可／不可がイベントの途中であった場合でもイベント更新のファイル分割の手順を変更する必要が無くなる。また、この停止時にファイルサイズで無効ファイルであるかどうかの判定を行なうことによりイベント更新直前で、次のイベントのファイルなどが既に用意されている場合でもこのタイミングでユーザーによる停止が有った場合も通常の停止処理で不必要なファイルを削除できる。

【００３６】上記コピー可／不可に対する記録方法はそのまま記録の一時停止／再開 に当てはめることができる。 一時停止したままイベントが更新した場合は、コピー不可のままイベントを更新した場合と同様に処理でき、そのまま次のイベントの期間全て一時停止のままであった場合も次のイベントの期間全てコピー不可のままであった場合と同様の処理が行われる。

【００３７】次に本発明の他の実施の形態によるイベントの再生方法について、説明する。イベントの再生に際しては、イベント別に複数に分割記録されたファイルは元々は連続して記録されたものであることから極力スムーズに再生されなければならない。この為には記録の時と同様に次のイベントに切り替わる際に事前に次のファイルを開いておくなどの前処理が望ましい。更に特殊再生も考慮すると、現在のイベントの再生が行われた直後には次のファイルを準備しておく方法が好ましい。

【００３８】また、逆方向再生もあるため、再生の方向が変化する毎に次に相当するファイルを変更する必要がある。

【００３９】再生方法の具体的な例を図４を用いて説明する、図４は記録装置内に複数に分割されたファイルに記録されたイベントを再生する再生方法を説明するフローチャートである。図４において、再生コントロールタスクは再生の開始、停止など再生タスクをコントロールする。再生タスクはファイルを再生する。

【００４０】イベントの更新時、即ち、図４におけるＴ＝ｔ１において、再生タスクはイベント５のファイルの再生を停止すると共にイベント６のファイルの再生を開始する。このイベントの更新に先立ち、イベント５を再生中に再生コントロールタスクから再生タスクに対して、次に再生するイベント６のファイルの準備を指示し、再生タスクはイベント６が記録されたファイルの再生準備を行う。

【００４１】新たなイベント６の再生開始とイベント５の再生停止を再生タスクから再生コントロールタスクに通知する（ステップＳ２０）。この通知を受けた再生コントロールタスクは再生タスクに対して、次に再生するイベント７のファイルの再生準備の指示を行い、再生タスクはこれを実行する（ステップ２１）。

【００４２】イベントの更新時、Ｔ＝ｔ２において、上記と同様に再生タスクはイベント６のファイルの再生を停止すると共にイベント７のファイルの再生を開始する。新たなイベント７の再生開始とイベント６の再生停止を再生タスクから再生コントロールタスクに通知する（ステップＳ２２）。この通知を受けた再生コントロールタスクは、このイベント７が再生する最後のイベントであることから再生タスクに対して、次に再生するイベントはないことからファイルなしの指示を行い、再生タスク次のファイルの再生準備を行わない（ステップＳ２３）。

【００４３】イベント７の再生終了時（Ｔ＝ｔ３）、再生タスクはイベント７のファイルの再生を停止し、ファイルの停止を再生コントロールタスクに通知する（ステップＳ２４）。この通知を受けて、再生コントロールタスクは再生処理を終了する。

【００４４】次に、イベント２を再生中にユーザからイベント１の逆再生の操作がされた場合の再生処理について、図５を用いて説明する。図４と同一のものについては、同一の符号を付してある。イベント５からイベント６への更新時（Ｔ＝ｔ１）、ステップＳ２０、ステップＳ２１は図４と同様であるので、説明は省略する。

【００４５】Ｔ＝ｔ４において、逆再生の操作が行われると、再生コントロールタスクは再生タスクに対して、逆再生と共にイベント１の逆再生の指示を行う（ステップＳ２５）。この指示を受けた再生タスクは、ステップＳ２１で準備をしていたイベント６のファイルの再生準備を中止し、再生中のイベント６のファイルの再生を停止し、イベント５のファイルの逆再生を開始する。即ち、Ｔ＝ｔ１からイベントを、記録時刻を遡る方向に再生する（ステップＳ２６）。

【００４６】上述の実施の形態に係る記録方法では、各イベント単位で１ファイルに記録したが、このファイルの前後に一定期間の余白領域を設け（いわゆる、のりしろ）、この余白領域を別ファイルとして管理して、記録された１つのイベントに対して、３つのファイルを作成することもできる。イベントの記録後、ユーザは余白領域を付けたまま１つにイベントとして取り扱うことも可

能であり、余白領域を削除して１つのイベントを１ファイルに編集し直すことも可能である。この記録方法では、イベントのコピーなどの編集でイベントの前後に余裕を持って取扱いたい場合など幅広く対応できる。

【００４７】

【発明の効果】以上詳述した発明によれば、 記録の段階でイベント別にファイルが生成されているため、ユーザに対してはユーザが意識した記録単位で提供することも可能であり、イベント単位での再生、コピー、削除、並べ替え等の編集作業を行うことが可能である。

【図面の簡単な説明】

【図１】本発明の実施の形態に係るテレビジョン受像機の構成を示すブロック図。

【図２】本発明の実施の形態に係る記録方法を示すフローチャート。

【図３】本発明の他の実施の形態に係る記録方法を示すフローチャート。

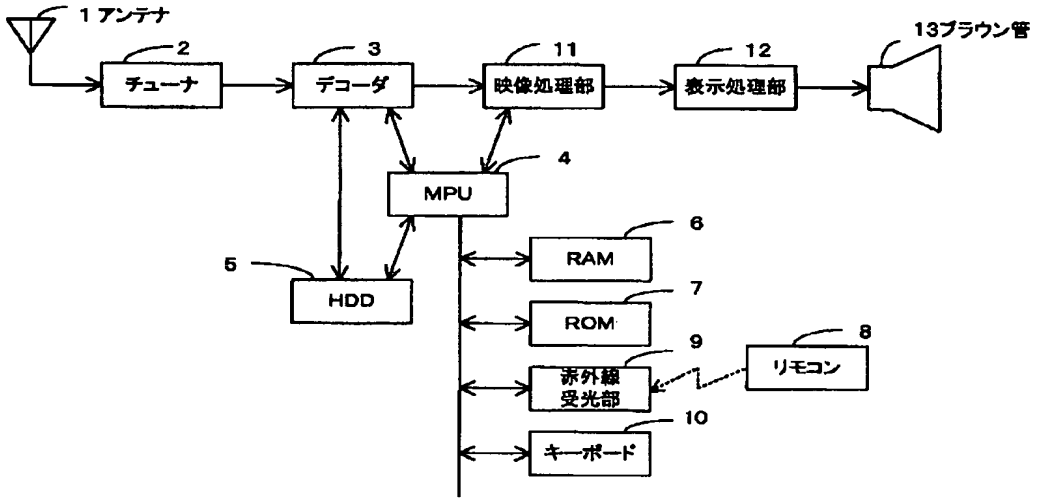
【図４】本発明の他の実施の形態に係る再生方法を示すフローチャート。

【図５】本発明の他の実施の形態に係る再生方法を示すフローチャート。

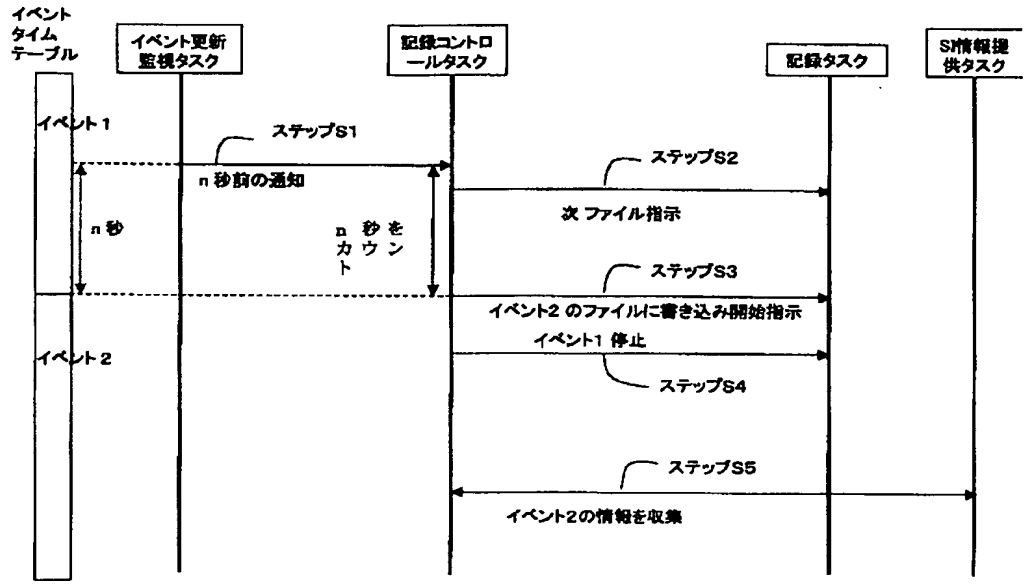
【符号の説明】

１…アンテナ	２…チューナ
３…デコーダ	４…ＭＰＵ
５…記録装置	６…ＲＡＭ
７…ＲＯＭ	８…リモコン
９…赤外線受光部	１０…キーボード
１１…　画像処理部	１２…表示処理部
１３…　ブラウン管	

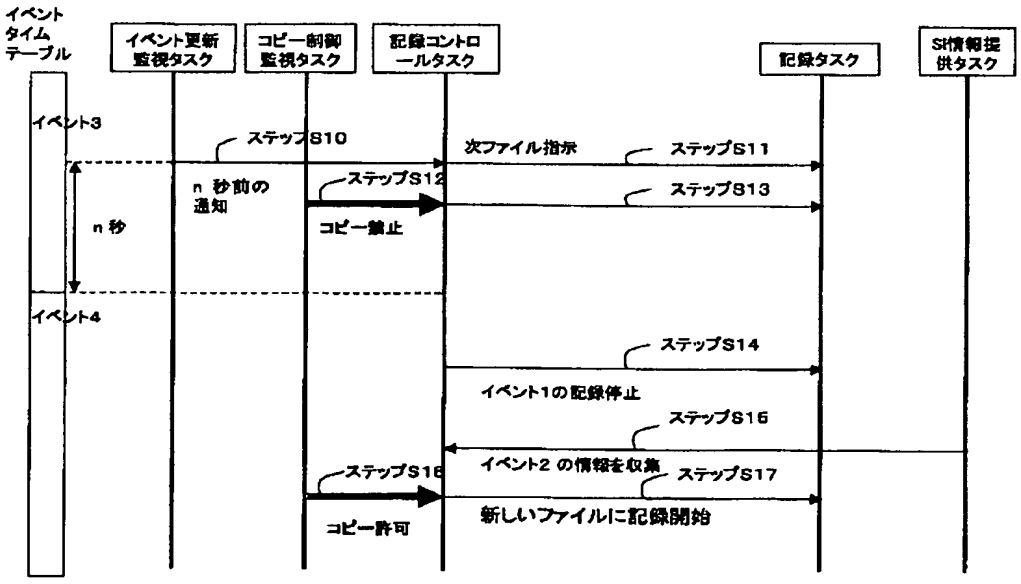
【図１】



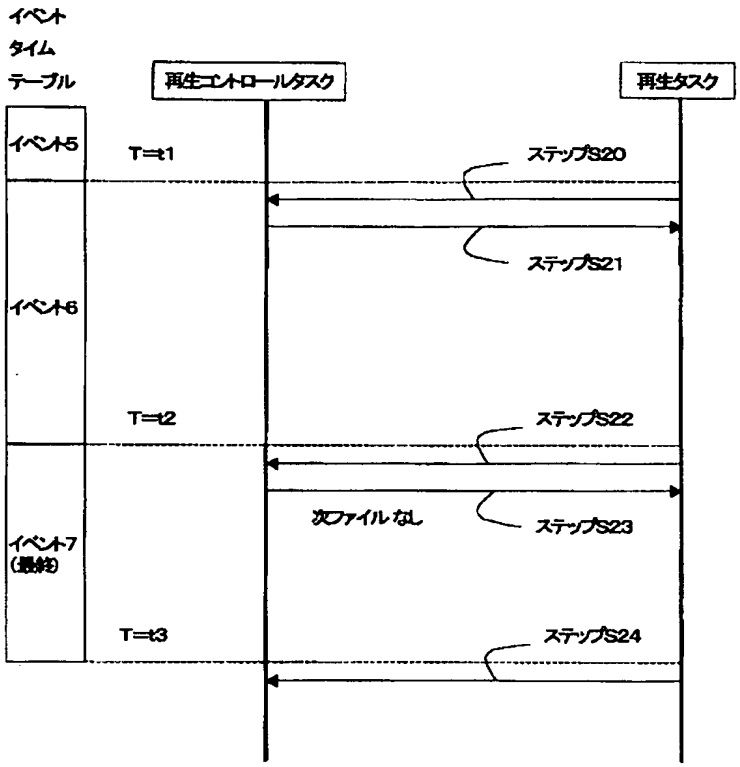
【図２】


イベント
タイム
テーブル
イベント更新
監視タスク
記録コントロ
ールタスク
記録タスク
SI情報提
供タスク
イベント1
ステップS1
n 秒前の通知
ステップS2
次 ファイル指示
n 秒
n 秒をカウント
ステップS3
イベント2 のファイルに書き込み開始指示
イベント1 停止
イベント2
ステップS4
ステップS5
イベント2の情報を収集

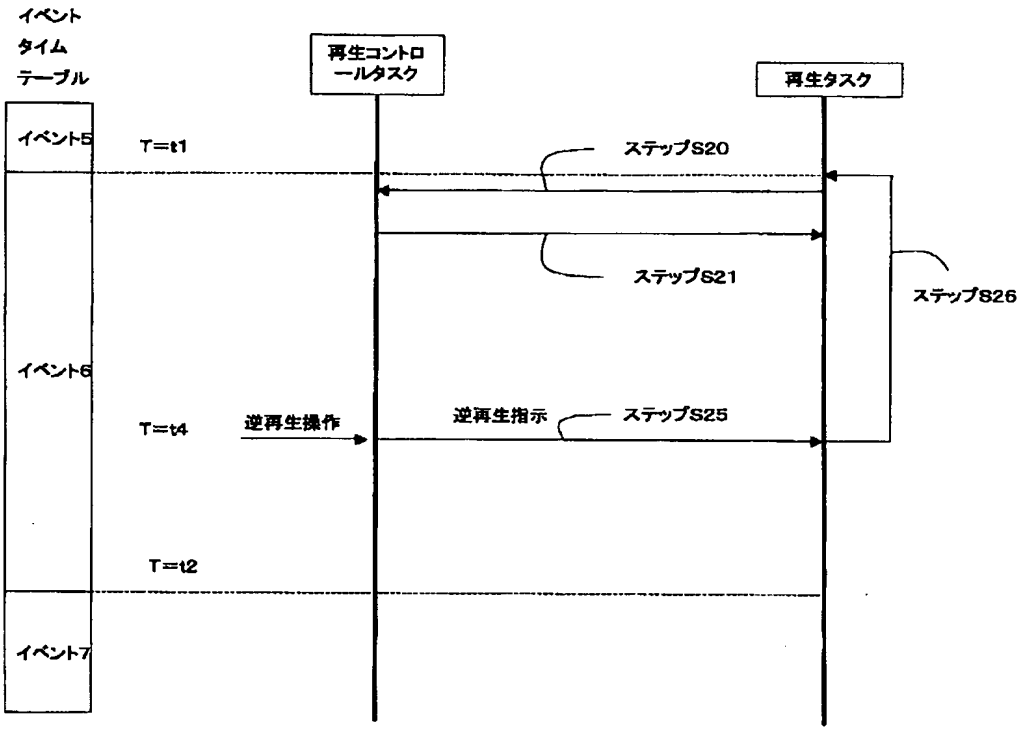
【図３】


イベント
タイム
テーブル
イベント更新
監視タスク
コピー制御
監視タスク
記録コントロ
ールタスク
記録タスク
SI情報提
供タスク
イベント3
ステップS10
次ファイル指示
ステップS11
n 秒前の
通知
ステップS12
ステップS13
コピー禁止
n 秒
イベント4
ステップS14
イベント1の記録停止
ステップS15
イベント2 の情報を収集
ステップS16
ステップS17
新しいファイルに記録開始
コピー許可

【図４】


イベント
タイム
テーブル
再生コントロールタスク
再生タスク
イベント5
T=t1
ステップS20
ステップS21
イベント6
T=t2
ステップS22
次ファイルなし
ステップS23
イベント7
(最終)
T=t3
ステップS24

【図５】



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